

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
14 July 2005 (14.07.2005)

PCT

(10) International Publication Number
WO 2005/062854 A2

(51) International Patent Classification: Not classified

(21) International Application Number:
PCT/US2004/042949

(22) International Filing Date:
20 December 2004 (20.12.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/531,399 19 December 2003 (19.12.2003) US
60/574,131 25 May 2004 (25.05.2004) US

(71) Applicant (for all designated States except US): UNIVER-
SITY OF CINCINNATI [US/US]; 3223 Eden Avenue,
Wherry Hall G7 Box 670829, Cincinnati, OH 45267-0829
(US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): REINEKE, Theresa,
M. [US/US]; 548 Gennie Lane, Cincinnati, OH 45244
(US).

(74) Agents: ALBAINY-JENEI, Stephen, R. et al.; Frost
Brown Todd LLC, 2200 PNC Center, 201 East Fifth Street,
Cincinnati, OH 45202 (US).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,
SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,
GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished
upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: POLYAMIDES FOR NUCLEIC ACID DELIVERY

(57) Abstract: The present invention describes reagents and methods for using a concatemerized double-stranded oligonucleotide molecules (CODN) for transcription factor decoys. In one embodiment, the concatemers consists of a variable number of end-to-end repeated copies of a short (more than 5, 10, 15, 20, 2, 3035, 40, 45, 50, 75, 100, or more bp but generally less than about 3 kb) dsDNA containing a sequence or sequences that act as transcription factor decoys. The present invention also provides for the use of the polymers for CODN/polymer complexes to a specific cell type; thus the agent can be made organ, tissue and/or cell-type specific. In another embodiment, the present invention provides for use of the CODN's *in vitro* or *in vivo*, in isolated cells or intact animals in which specific blockade of transcription factors or delivery of DNA or other biological effector is desirable. In one embodiment, this includes use as a research tool, including studies of specific genes and studies to identify specific genes regulated by the transcription factors targeted. In another embodiment, the present invention provides for using polyamides for NF-kB-specific CODN delivery in the treatment of myocardial ischemia/reperfusion and myocardial infarction, heart failure and hypertrophy, cardioprotection, stroke, neuroprotection, sepsis, arthritis, asthma, heritable inflammatory disorders, cancer, heritable immune dysfunctions, inflammatory processes, whether caused by disease or injury or infection, oxidative stress to any organ whether caused by disease, surgery or injury. The decoys may be any transcription factors, including, but not limited to, NF-kB, AP-1, ATF2, ATF3, SP1 and others.